

REMARKS

Claims 1-27 are presently pending.

I. THE 35 U.S.C. § 103 REJECTION OF CLAIMS 1, 2, 5, 8-14, 16-20, AND 22-27

Claims 1, 2, 5, 8-14, 16-20, and 22-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hossfield et al. (US 5,684,597)(hereinafter “Hossfield”) in view of Rasmussen et al. (US 5,277,651)(hereinafter “Rasmussen”). This rejection is respectfully traversed.

Hossfield discloses a device for receiving a coin and measuring its diameter. This device can be used, for example, in a vending machine, pay telephone, or coin-operated washing machine. *See* Hossfield, col. 3, lines 8-14. Hossfield’s device receives a single coin at a time through a coin slot into a coin cavity in a disk. Col. 3, lines 6-18. A motor then begins rotating the disk through a fixed angle, less than a full rotation, at a fixed and uniform rate. Col. 3, lines 25-41; col. 5, lines 4-7. During this rotation, a sensor measures light from an LED until the leading edge of the coin interrupts the beam, and this amount of time is measured. Col. 4, lines 38-54. A similar measure is made of the coin’s trailing edge, here measuring the amount of time from the beginning of rotation until a light sensor is uncovered. Col. 4, lines 55-65. If the coin is accepted, the coin falls through a coin collection slot common to all coin denominations into a collection box. Col. 6, line 61-col. 7, line 6.

The examiner has acknowledged that Hossfield “does not disclose an encoder that produces an encoder pulse for each incremental movement of the rotatable disc” Office Action at 2. The examiner proposes remedying these deficiencies by looking to Rasmussen. Specifically, the examiner states that a person of ordinary skill in the art would combine Rasmussen with Hossfield in order to use an encoder “for the purpose of precisely monitoring the angular movement of the rotatable disc and diverting coins to appropriate paths.” Office Action at 3. Hossfield, however, teaches away from the use of an encoder. Instead, Hossfield relies on a motor that produces a fixed and uniform rate of rotation such that a measurements of a coin can be made purely by measuring the amount of time it takes from the beginning of rotation for a leading edge of a coin to interrupt light from an LED:

As described heretofore, the angular velocity of rotation is very uniform because it is accurately controlled by motor 42 at 0.6° per high frequency pulse from processor 54, so the counts in counters 88a and b also accurately represent the respective angular orientations of disk 22 when the leading and trailing edges of

the coin 82a or b arrive at or intersect respective light sensors 52a and b. Furthermore, the angular orientation of disk 22 when leading and trailing edges of coin 82a or b intersect respective light sensors 52a and b is a function of the size, or more particularly the diameter, of coin 82a or b. Thus, the respective elapsed time counts in leading and trailing edge counters 88a and b accurately represent or correspond to the diameters of the coin 82a or b in coin notch 20 of disk 22. For example, with 600 pulses per second and each pulse rotating wheel 22 through an arc of 0.6°, wheel 22 would rotate at 1 revolution per second, or 0.25 seconds between the initial orientation as shown in FIG. 5 and the reference or evaluation orientation as shown in FIG. 7.

Col. 5, lines 12-30 (emphasis added). There is simply no need to precisely monitor the angular movement of the disk in Hossfield, as the disk's angular movement is tightly controlled and does not need to be measured in order to determine its rotation. The amount of rotation of the disk is taken as a given when measuring the amount of time it takes for the leading edge of the coin to block the LED. Given the device's target application, (e.g., vending machines, washing machines, pay telephones, etc.) a person of ordinary skill in the art would not be motivated to combine Hossfield and Rasmussen, as proposed by the Examiner, and make the device larger and more complicated by adding an unnecessary encoder and additional hardware, logic, software, etc., for interpreting it. *See, e.g., In re Ratti*, 270 F.2d 810 (CCPA 1959) ("[i]f a proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the reference are not sufficient to render the claims *prima facie* obvious."). Instead, Hossfield's intended applications require simple and inexpensive devices of limited features and size.

Claim 1, on the other hand, is directed to a coin processing system for use in a variety of applications, requiring flexibility in the number of coins it can process and the speed at which it can process coins. As such, claim 1 recites a system to process coins including "an encoder attached to the rotatable disc for producing an encoder pulse for each incremental movement of the rotatable disc" and has been amended to more clearly state that "a rate of rotation is adjustable." Claim 1 is thus allowable for this reason. Claims 10, 22, 23 have similarly been amended and are similarly allowable.

Moreover, FIG. 16 and encoder sensor 212 therein of Rasmussen, cited by the Examiner, relates to an encoder adapted to monitor the angular movement of the disc 13 using indicia 211. This does not disclose or suggest, for example, a controller "adapted to determine the number of encoder pulses received during a period of non-receipt of the light-detection signal caused by

each coin passing through the light beam, the controller being adapted to compare the determined number of encoder counts to the stored master denominating characteristic information upon resuming to receive the light-detection signal from the light detector" as is recited in claim 1. Claims 10, 22, and 23 include similar limitations. Thus applicants respectfully assert that the Examiner has not set forth a *prima facie* case of obviousness for claims 1, 10, 22, or 23.

Claim 1, also has been amended to more clearly recite a "continuously rotatable disc" for imparting motion to "a plurality of coins of mixed denominations." Claims 22 and 23 have similarly been amended. Hossfield does not teach or suggest a continuously rotatable disk or imparting motion to a plurality of coins. Instead, Hossfield describes a disk that rotates through a fixed angle, e.g., 90 degrees, and then returns to the initial position. Col. 5, lines 4-7. Having a fixed angle of rotation and a fixed and uniform rate of rotation allows Hossfield to simply measure denomination by measuring the time from the beginning of rotation until a leading edge of a coin interrupts light from an LED. Given the limited purpose of Hossfield's device, a person of ordinary skill in the art would not be motivated to modify Hossfield with a more complicated and costly continuously rotatable disk and the hardware and software necessary to determine when to start and stop measuring. Thus, a person of ordinary skill in the art would not seek to combine Hossfield with Rasmussen to achieve a continuously rotatable disk for imparting motion to a plurality of coins of mixed denominations. Thus, claims 1, 22, and 23 are allowable for this reason as well.

Claims 1, 10, 22, 23 have also been amended recite that the light beam is emitted or directed in substantially the same plane as the coin path. Hossfield teaches emitting a light beam orthogonal to the coin path. Thus claims 1, 10, 22, and 23 are allowable for this reason as well.

For these reasons, independent claims 1, 10, 22, and 23 are believed to be allowable.

Claims 2-9 depend from claim 1; claims 11-21 depend from claim 10; and claims 24-26 depend from claim 23. Thus each of these claims are also believed to be allowable.

The examiner has also acknowledged that Hossfield "does not disclose . . . a diverter with positions to plural exit paths." Office Action at 2. A person of ordinary skill in the art would not have sought to add a diverter with plural exit channels to the device of Hossfield. Hossfield is directed to a device that identifies the denomination of coins in a vending machine, pay telephone, etc. Col. 3, lines 8-14. The device is not intended to sort coins, nor would there be

any motivation to do so, as a person of ordinary skill in the art would seek a simple device of limited function, and limited size, given the target applications specifically recited in Hossfield. Thus, Hossfield teaches away from adding a diverter and multiple exit paths, and a person of ordinary skill in the art would not seek to combine Rasmussen for this feature. In contrast, applicants claim a coin sorter. Claim 8 specifically recites a “diverter disposed along the coin path beyond the light source, the diverter being moveable between a first position for permitting coins to proceed to a plurality of exit channels.” Similarly, independent claim 10 has been amended to recite “a plurality of coin exit regions.”

It is further noted that the Examiner’s statement of rejection is does not set forth any evidence that Rasmussen teaches or suggests “a diverter disposed along the coin path beyond the light source, the diverter being moveable between a first position for permitting coins to proceed to the plurality of exit channels and a second position for diverting coins to a reject region” (claim 8) or, further thereto, that the “controller causes the diverter to move from the first position to the second position when the number of encoder pulses determined when a coin passes through the light beam does not favorably compare to the stored master denominating characteristic information.” (claim 9). Accordingly, the Examiner has not set forth a *prima facie* case of unpatentability as to claims 8 and 9.

Thus, claims 8, 9, and 10 are believed to be allowable for these reasons as well. Claims 11-21 depend from claim 10, and are also believed to be allowable for these reasons.

II. THE 35 U.S.C. § 103 REJECTION OF CLAIMS 3, 4, 6, 7, 15, AND 21

Further to the above, the Examiner alleges that Panzeri et al. (US 6,142,285) discloses “a similar device that includes a laser diode (11) and at least one light guide (12) along the coin path for the purpose of producing a laser beam (see column 6 line 56) and increasing the size of the laser beam to impinge upon larger portions of a coin (see column 6 lines 60-63)” and alleges that “[i]t would have been obvious for a person of ordinary skill in the art at the time of the invention to modify Hossfield et al. in view of Rasmussen et al. by utilizing a laser diode, as disclosed by Panzeri et al., for the purpose of producing a laser beam and increasing the size of the laser beam to impinge upon larger portions of a coin.”

Applicant submits that, in view of all of the grounds presented in traverse of the 35 U.S.C. § 103 rejection above, Panzeri et al. is insufficient to make up for the deficiencies of Hossfield and/or Rasmussen, whether such references are taken singly or in combination.

Reconsideration and withdrawal of this rejection is requested for at least the above-noted reasons.

Further, Panzeri et al. fails to disclose or suggest, for example, “a controller adapted to receive the encoder pulses from the encoder, the controller adapted to receive the light-detection signal from the light detector, the controller being adapted to determine the number of encoder pulses received during a period of non-receipt of the light-detection signal caused by each coin passing through the light beam, the controller being adapted to compare the determined number of encoder counts to the stored master denominating characteristic information upon resuming to receive the light-detection signal from the light detector.” Instead, Panzeri et al. provides “a laser beam (13) is directed onto a face of a coin (4) . . . so as to obtain an indication of a characteristic of the face of the coin,” such characteristic being used to identify the coin (*see Abstract*).

Applicant further submits that Panzeri et al. fails to disclose or suggest, for example, in combination with the recited acts of claim 16, the acts of “generating a first light-detection output when the light beam traversing the coin path is incident upon the light detector” and “generating a second light-detection output when the light beam traversing the coin path is not incident upon the light detector.” Panzeri et al. instead disclose that the coin 4 only intercepts “*a portion of this laser beam 13 that passes between the laser diode 11 and the sensor array unit 3*” (col. 7, lines 51-55)(emphasis added). Panzeri et al. thus do not disclose or suggest a condition wherein the light beam traversing the coin path is not incident upon the light detector or generating a second light-detection output based upon such condition.

Thus, reconsideration and withdrawal of this rejection is requested for at least the above noted reasons.

III. Conclusion

The Applicants believe that the claims are in a condition for allowance and action toward that end is earnestly solicited. If there are any matters which may be resolved or clarified through a telephone interview, the Examiner is respectfully requested to contact the Applicants' undersigned attorney at the number indicated.

No fees are believed due in connection with this amendment. However, the Commissioner is authorized to charge any fees which may be required in connection with this

application (excluding the issue fee), or credit any overpayment to Deposit Account No. 50-4181, Order No. 247171-000426USP1.

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Respectfully submitted,
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